DE GRUYTER OPEN

STUDIES IN LOGIC, GRAMMAR AND RHETORIC 55 (68) 2018

DOI: 10.2478/slgr-2018-0035

Ralph H. Johnson
University of Windsor
Centre for Research in Reasoning, Argumentation and Rhetoric
ORCID 0000-0001-5792-945X

Marcin Koszowy
University of Białystok & Polish Academy of Sciences
ORCID 0000-0001-5553-7428

LOGICAL CULTURE AS A COMMON GROUND FOR THE LVOV-WARSAW SCHOOL AND THE INFORMAL LOGIC INITIATIVE

Abstract. In this paper, we will explore two initiatives that focus on the importance of employing logical theories in educating people how to think and reason properly, one in Poland: The Lvov-Warsaw School; the other in North America: The Informal Logic Initiative. These two movements differ in the logical means and skills that they focus on. However, we believe that they share a common purpose: to educate students in logic and reasoning (logical education conceived as a process) so that they may be able to apply their skills to analyze the issues in their society (logical culture as a result of logical education). The aim of the paper is to justify this claim by exploring research objectives and products that are common to both movements.

Keywords: Informal Logic Initiative, Lvov-Warsaw School, critical thinking, logical culture, logical education, pragmatic logic, deductive and non-deductive reasoning.

1. Introduction

The purpose of the paper is to discuss two research movements: one in Poland – the Lvov-Warsaw School; the other in Canada and the USA – the Informal Logic Initiative, with the intention of highlighting their similarities and differences. This task will be accomplished in four steps. In Section 2 we will give a brief account of the characteristics of each research movement. This outline will constitute a basis useful for discussing, in Section 3, the most important contributions of each approach. This will lead to comparing and contrasting them in Section 4. Conclusions and suggestions for future inquiry will be discussed in Section 5.

1.1. The Central Thesis

In his entry on "Informal Logic" for the *Stanford Encyclopedia of Philosophy*, Groarke (2017) writes:

> One might compare North American approaches to informal logic to *pragmatic logic* as it has been developed in the Polish logical tradition (Koszowy 2010), where it is one component of the Polish School of Argumentation. The latter brings together a multitude of formal and informal approaches to argument. It has outlined its research program in a Polish Manifesto (Budzynska et al. 2014). One might easily describe informal logic as it has developed in North America and pragmatic logic as it has developed in Poland as two distinct (but in many ways, similar) attempts to create a satisfactory informal logic.

We believe that Groarke is correct. In this paper, our aim is to expand upon this statement by Groarke regarding the 'significant affinities' between these two movements by further identifying their common features and then exploring them in some detail. We believe that the key resemblance between the Informal Logic Initiative (which is historically closely allied with the Critical Thinking Movement)[1] and the Lvov-Warsaw School (which is here taken as representing 'the Polish logical tradition') lies in the fact that both take the teaching of logic to be a matter of *acculturation*, equipping students to come to grips with the issues of their society by applying logical techniques and methods. Both agree that logic is crucial for citizens of that society; that is, in their education they must become acquainted with logical culture. Although each tradition emphasizes its own distinctive approach to logic and to teaching logic, the *acculturation component* is crucial for both movements, and thus may serve as a focal point for a further exploration of other significant affinities between them.

Our motivation for exploring commonalities between the Lvov-Warsaw School and the Informal Logic Initiative also stems from our observation that the current international recognition of the logical studies in Poland seems to us inadequate in light of the rich repertoire of methods of inquiry into language, reasoning, and argument proposed by the Lvov-Warsaw School. Among them, Argumentation Studies seem to be a natural area for seeking for connections to the Lvov-Warsaw School heritage, because, as the authors of the *Handbook of Argumentation Theory* (van Eemeren et al., 2014, p. 725) state: "although the term 'argumentation theory' was not yet used in the philosophy of language and logic that was practiced by Kazimierz Ajdukiewicz, Tadeusz Czeżowski, Stanisław Jaśkowski, Stanisław Kamiński, Seweryna Łuszczewska-Romahnowa, and their collaborators, a great many

topics were already examined that are nowadays central in pragma-dialectics and informal logic" (for the more detailed exposition of these ideas see *Handbook*, pp. 725–726).

In what follows, then, we plan to develop the hypothesis that the notion of logical acculturation can help to capture the ideals behind the development of the Informal Logic Initiative as well as that of the Lvov-Warsaw School. The next two subsections of Section 1 briefly discuss the historical context (Section 1.2.) and say a bit more about our motivation (Section 1.3.). In Section 2, we present the main characteristics of two research movements. Section 3 discusses the research and educational motivation of the two movements. This section leads to Section 4, which explores the common ground between two approaches. In Section 5, 'Concluding Remarks,' we show how the comparison proposed in this paper may serve as a point of departure for a further exploration of the significant affinities between both movements.

1.2. The Historical Context

In order to emphasize the complexity of exploring commonalities between both movements, we will show that the Informal Logic Initiative and the Lvov-Warsaw School have different origins and are founded on diverse conceptual frameworks and methodological assumptions. Despite these differences, the authors believe that the idea of *logical acculturation* captures a striking similarity in both movements. In order to make this observation explicit, in this section we now offer a brief overview of the historical origins of these two traditions.

In Poland there is a very rich formal-logical tradition going back to Łukasiewicz, Leśniewski, and Tarski who were prominent representatives of the Lvov-Warsaw School (LWS) founded and developed by Kazimierz Twardowski in 1895. The LWS was a philosophical movement (1895–1939), the rise of which is associated with 'the Golden Age of Science and Letters' in Poland (Simons, 2002). Polish logical studies in the Lvov-Warsaw School are best known for the developments in formal logic made by Lejewski, Mostowski, Sobociński, and many others (see, e.g., Coniglione et al., Eds. 1993; Kneale & Kneale, 1962; McCall, 1967; Woleński, 1995). Although the 'formal-logical wing of the school' (see Woleński, 2013) is widely recognized in the international research community, some of its other important logical ideas and research goals are barely known in the broader international community of researchers working on informal logic and argumentation theory.[2] In this paper, we will be putting the spotlight on some of these.

Quite a different situation obtained in Canada and the U.S. There was no such (articulated and widely-accepted) ideal of a logical culture. Most philosophers trained in North America in the 40s, 50s and 60s would have been exposed to formal logic in their graduate courses, and this exposure was reflected in the type of logical education they gave their students. It is what Johnson and Blair (1980) called 'the global approach' and is exemplified by Copi's famous text: *Introduction to Logic* (1954). The standard introductory logic course at a university in those days would have had three parts: Deductive Logic; Inductive Logic; and Fallacies.

In the 70s, there emerged a growing realization in North America that students were not learning how to think, but rather only to memorize. From the common concern on the part of educators, there developed a widespread awareness that something needed to be done: students needed to be taught how to reason, or think critically. What was needed, they came to believe, was a better tool than formal deductive and inductive logic-indeed, a different logic. Johnson and Blair (1980) developed what they referred to as 'informal logic,' partly because these new courses tended to focus on what were called 'the informal fallacies,' but also because the arguments that they were teaching students how to appraise were rarely deductive arguments – the paradigm of argument studied in Formal Logic courses.

We hope that this preliminary exposition suffices to indicate an important area of agreement between the Informal Logic Initiative and the Lvov-Warsaw School, even though the rationale and research goals of these two traditions are quite distinct from each other. In what follows, a deeper discussion of research objectives and products found in these movements will, we believe, reveal further significant affinities between them.

2. The Main Characteristics of Two Research Movements

The aim of this section is to discuss main features/characteristics of the research program of the Lvov-Warsaw School (Sect. 2.1.) and that of the Informal Logic Movement (Sect. 2.2.).

2.1. The Lvov-Warsaw School

The main feature of this research movement – which is crucial for comparing it to the Informal Logic Initiative – is the notion of '*kultura logiczna*' ('logical culture').

2.1.1. Origins of the Lvov-Warsaw School

The Lvov-Warsaw School was an extraordinary research movement that developed a coherent institutional enterprise from 1895 until 1939; i.e., until the beginning of World War II. The starting point of the movement is associated with Twardowski's arrival in Lvov (Lwów) to take the academic position of the Professor of Philosophy at the Jan Kazimierz University. Twardowski had been a student of Franz Brentano, and gained his research and teaching skills in Vienna. Twardowski's main aim was very ambitious: he wanted to create a philosophical school that would be analytical in the sense of making philosophical analysis the main method of the school and which would take Brentanian postulates of the precision of philosophical language as a main goal of doing philosophy. According to Twardowski, among the key tasks of philosophy, are: (i) solving particular problems rather than building philosophical syntheses, (ii) employing methods of linguistic analysis that might be helpful in making the language of philosophy itself more precise.

2.1.2. The Lvov-Warsaw School and Logical Studies

One of the main arguments for the claim that the Lvov-Warsaw school should not be exclusively associated with the developments of formal logic is a common balance between two components of teaching logic in Polish universities in line with the tradition of the school. The first component consists in the study of rules and principles that would allow students to improve their skills in formulating clear and precise utterances and draw conclusions from the data (Ajdukiewicz, 1957; see also Sect. 2.1.2.). However, in order to obtain a fully-fledged set of skills of correct language use and reasoning, the member of this school believed that a second component is necessary, namely the study of fallacies understood as typical derailments of correct language use and/or proper thinking. In what follows, these two components will be briefly discussed.

Among the main research goals of the Lvov-Warsaw School was a systematic study of knowledge-gaining procedures (and their results) such as formulating problems, defining, interpreting, classifying and reasoning (Czeżowski, 2000). The knowledge of the basic rules for performing these procedures, together with dispositions and skills of employing them in scientific and in everyday discourse, are regarded as crucial in educating the person who manifests the 'logical culture.'

Although some analytic philosophers have discussed in detail the diversity of ideas that constitute the heritage of the Lvov-Warsaw School (see, e.g. Simons, 1992; Smith, 2006; Woleński, 1989), these authors also

acknowledge that this tradition is not thoroughly studied in the world's philosophy. According to the *Stanford Encyclopedia of Philosophy* (Woleński, 2013)[3], apart from the achievements in formal logic, the Lvov-Warsaw School is scarcely known outside Poland for its considerable logical enterprises:

> The logical achievements of the LWS became the most famous. Doubtless, the Warsaw school of logic contributed very much to the development of logic in the 20th century. Other contributions are known but rather marginally. This is partially due to the fact that most philosophical writings of the LWS appeared in Polish. However, this factor does not explain everything. Many writings of the LWS were originally published in English, French or German. However, their influence was very moderate, considerably lesser than that of similar writings of philosophers from the leading countries (Woleński, 2013).

Similar observations are made by Simons (2002), who notices that the Lvov-Warsaw School is not sufficiently recognized outside Poland. However, some intensive efforts towards its popularization have been undertaken:

> So interest in the Poles remains scant and patchy outside Poland. However, Jan Woleński, Jacek Juliusz Jadacki and other Poles continue to write about the movement in the old country, and there are several scholars abroad who are doing good work, notably Arianna Betti in Amsterdam, and Anna Zielińska and Wioletta Miskiewicz in Paris. So the future of historical studies on this Golden Age is, if not rosy, not wholly bleak (Simons, 2002).

One of the main features of the research profile of the Lvov-Warsaw School is that the school linked the formal and the informal tools of argument analysis and evaluation.[4] Hence, informal analyses would mean those that do not focus on the logical form of expressions (purely syntactic approach), but on the meaning of utterances (semantic angle) and the ways they are performed by language users (pragmatic angle).

2.1.3 Summary

In the Lvov-Warsaw School, there were two wings of inquiry into the nature of language and reasoning: formal and non-formal. Some logicians from the Lvov-Warsaw School, such as Ajdukiewicz, accepted the broad notion of logic which encompasses not only formal logic, but also semiotics and methodology of science (Koszowy, 2010, pp. 32–33; see also Johnson, 2009, p. 39). On the basis of this observation, we may state that some of the Lvov-Warsaw School representatives also took into account the 'informal' approach to logic – in terms of not focusing exclusively on the form of

sentences and statements, as these are portrayed in modern deductive logic. Hence, we may ask: what particular ideas present in the logical studies of the Lvov-Warsaw school are in line with the major research strands in informal logic?fTo help answer this question, we turn now to our discussion of The Informal Logic Initiative.

2.2. The Informal Logic Initiative

In this section, we will discuss the Informal Logic Initiative (ILI) that began in North America in the 70s. That will lead to a discussion of how it stands related to cognates such as formal logic, critical thinking, and argumentation. Then we will undertake a comparison with the Lvov-Warsaw School (LWS).

2.2.1. Origins of Informal Logic

When Johnson was hired in 1966 to help update logic instruction at the University of Windsor (Ontario, Canada), he found that students there were being taught symbolic logic (or mathematical logic) – a species of formal deductive logic.[5] For the first couple of years, he taught that logic course using Copi's *Symbolic Logic*, a text that traffics in largely artificial arguments, like the following:

> If Argentina joins the alliance, then either Brazil or Chile will boycott it. If Brazil boycotts the alliance, then Chile will boycott it also. Therefore, if Argentina joins the alliance, then Chile will also (Copi, 1965, p. 50).

Very few people in the real world argue in this mannerly fashion. Johnson found that having his students work on examples of this sort did not familiarize them with the types of argument they would encounter outside the logic classroom. So the transfer value of formal logic seemed to be marginal. A second limitation of formal logic is what falls out when it is employed as a tool for the analysis of real arguments. In the tradition of formal deductive logic, a good argument is a sound argument; and a sound argument is defined as one that has true premises and instantiates a valid logical form. So students are taught various techniques for determining whether or not an argument is valid. 'Valid' here means that the conclusion of the argument follows necessarily from the premises. The classic example of such an argument is "All men are mortal, Socrates is a man; therefore, Socrates is mortal." It turns out that whether an argument is valid is a function of its logical form. However, there was a growing realization this approach is ill-equipped to handle real arguments[6] because they do not aspire to the norm of validity.

Moreover, many students complained that they found it difficult to connect with this approach. They said things like: "How does this apply to the arguments I have to deal with outside of the logic classroom?" Just about that time, a representative from the McGraw-Hill Book Company provided Johnson with a sample copy of Howard Kahane's text *Logic and Contemporary Rhetoric* (Kahane, 1971). The following statement in the Preface caught his attention:

> Today's students demand a marriage of theory and practice. That is why so many of them judge introductory courses on logic, fallacy, and even rhetoric not relevant to their interests. In class a few years back, while I was going over the (to me) fascinating intricacies of the predicate logic quantifier rules, a student asked in disgust how anything he'd learned all semester long had any bearing whatever on President Johnson's decision to escalate again in Vietnam. I mumbled something about bad logic on Johnson's part, and then stated that *Introduction to Logic* was not that kind of course. His reply was to ask what courses did take up such matters, and I had to admit that so far as I knew none did.
>
> He wanted what most students today want, a course relevant to everyday reasoning, a course relevant to the arguments they hear and read about race, pollution, poverty, sex, atomic warfare, the population explosion, and all the other problems faced by the human race in the second half of the twentieth century (1971, p. vii).

Kahane's words reflected Johnson's experience, so he decided to develop a new course called 'Applied Logic' that would teach students argument analysis, using Kahane's text featuring the fallacy approach.

Johnson taught the course for the first time in 1970–71, and found that it was well-received by the students. The next year Blair and Johnson each taught sections, and they continued offering that course throughout the early 70s, comparing notes on how the course was developing, discussing problems in the teaching of it, and preparing supplementary material, exercises, and tests. Gradually they became unhappy with Kahane's text, for two reasons. *First*, it was an American text, and Canadian students were sensitive to this matter. One student said: "Why should we be expected to critique arguments about Wally Hickel[7] and others? Don't our own Canadian politicians make arguments that could be featured on issues that concern us?" (This was at a time when there was growing sensitivity to American influence in Canada.[8]) Johnson and Blair thought that the students' complaints were legitimate and that there was a genuine need for a Canadian text. *Second*, Johnson and Blair were not satisfied by what seemed to them Kahane's sometimes loose treatment of the fallacies. For

example, his description of *begging the question* as 'failure to support the very question at issue' (1971, p. 44) could apply equally well to either irrelevant reason or hasty conclusion. They decided that their presentation of the fallacies needed to be more rigorous and set about doing that by providing a set of conditions for the occurrence of each fallacy. Their approach stressed that when a charge of fallacy is made, it must be supported by an argument in which each of the conditions for that fallacy are satisfied.

By the time *Logical Self-Defense* appeared in 1977, Johnson and Blair had become aware of a number of similar texts that had begun to appear. Among them were: Stephen Thomas, *Practical Reasoning in Natural Language* (1973); Michael Scriven, *Reasoning* (1976); Ronald Munson, *The Way of Words: An Informal Logic* (1977). It seemed that a 'Geist' of some sort was manifesting, so they decided to host a conference that would bring together people who had an interest in this newly emerging development. In June 1978, Blair and Johnson chaired the First International Symposium on Informal Logic, with papers by Michael Scriven, John Woods, Douglas Walton, and others (see Blair and Johnson, 1980). That conference confirmed their belief that interest in informal logic extended well beyond Windsor. That conference also gave birth to the *Informal Logic Newsletter*, first published in 1979 with Johnson and Blair as its co-editors, and which in 1984 became the journal, *Informal Logic* (with the support of the University of Windsor) (see section 2.2.2.).

2.2.2. 'Informal Logic' Defined

Here is how Groarke presented Informal Logic in his contribution to the *Stanford Encyclopedia of Philosophy* (Groarke, 2017):

> Informal logic is usually understood narrowly, as a contemporary field of study which emerged in the last half century, when many philosophers and logicians turned their attention to the analysis, evaluation and improvement of real life argument. This contemporary endeavor can be understood much more broadly, as the continuation of many older attempts by philosophers and others who have (since ancient times) proposed methods for understanding and assessing actual ('real life,' 'everyday') arguments.

In many instances, the evolution of informal logic has been motivated by a desire to develop ways of analyzing and evaluating ordinary reasoning which can be made a part of general education, and which can inform and improve public reasoning, discussion and debate. To this extent, the interests of informal logic closely intersected with those of the Critical Thinking

Movement, which had as its goal the development of a model of education which places more emphasis on critical inquiry.

Though informal logic is sometimes portrayed as a theoretical alternative to formal logic, the relationship between the two is more complex than such a comparison might suggest. While the attempt to teach good reasoning and critical thinking is inevitably couched in natural language, research in informal logic may employ formal methods (see Walton's "Problems and Useful Techniques: My Experience in Teaching Courses" in Argumentation, Informal Logic and Critical Thinking in *Informal Logic*, 2000), and one could argue that the informal accounts of fallacy in which informal logic specializes can in principle be formalized. Recent work in computational modelling, which attempts to implement informal logic models of natural-language reasoning (Walton and Gordon, 2015), suggests that defeasible (non-monotonic) logic, probability theory and other non-classical formal frameworks may be well suited to this task.

Informal logic is a relatively recent development yet has already exerted a significant influence on contemporary education. This influence is reflected in the thousands of courses and hundreds of textbooks that teach informal logic, whether by that title or some cognate, like 'practical reasoning' to university and college students in Canada, the United States, the United Kingdom, and a growing number of other countries.

In keeping with these educational developments, the beginnings of informal logic have been tied to the call for more relevant higher education that accompanied the social and political movements of the 1960s in North America. In logic, and especially the teaching of logic, this development prompted the attempt to apply logical analysis to concrete examples of everyday reasoning. To this extent, the roots of informal logic are found in the work of authors who replaced the artificial examples of good and bad argument that characterized earlier logic texts (e.g., Copi, 1954) with actual instances of reasoning, argument and debate taken from newspapers, the mass media, advertisements and political campaigns (as in Kahane, 1971).

Though Hamblin's *Fallacies* (1970) and Toulmin's *The Uses of Argument* (1964) anticipate the interest in informal reasoning that characterizes informal logic, it may be said that recognition of informal logic as an autonomous discipline really begins in North America in the 1970s, in the work of Johnson and Blair. Their *Logical Self-Defense* (Johnson and Blair, 1977) was an early introductory text to emphasize concrete examples of informal reasoning, and their *Informal Logic Newsletter* (now the journal *Informal Logic*; http://www.informallogic.ca/) helped to establish the field as a distinct discipline for discussion, development and research (see section 2.2.1.).

Though Johnson and Blair have offered various characterizations of informal logic in various papers (1980; 1985), they did not attempt a formal definition until 1987. In a paper written for the 1988 World Congress of Philosophy (published in *Informal Logic*), Johnson and Blair put forward a definition of informal logic: viz., "a branch of logic whose task is to develop non-formal standards, criteria, procedures for the analysis, interpretation, evaluation, criticism and construction of argumentation in everyday discourse" (Johnson and Blair, 1987, p. 147). Since that time they have broadened this to include the sort of argument that occurs not just in everyday discourse but also in disciplined inquiry[9] – what Weinstein called "stylized arguments *within the various special disciplines*" (1990, p. 121). Herewith we offer some comments on that definition.

First, it should be noted that the term 'informal logic' is a loose descriptor of an inquiry that others have defined or understood in other ways. See Johnson (2008) for a discussion of this point.

Second, the 'in' of informal was originally conceived to signal a kind of negation of formal (deductive) logic. At the start of the initiative, there was an underlying dissatisfaction with, if not downright hostility to, formal logic.[10] There were questions about its ability to illuminate natural language arguments, 'arguments on the hoof' (as Woods (2006) would later refer to them), and many thought that the validity requirement was too stringent. Many took the view that there could be perfectly good arguments that were not valid – inductive arguments, appeals to authority, for example. And many believed that there were pitfalls in argumentation that were not illuminated by traditional approaches to logic, like the *ad hominem* fallacy.

Third, an obvious point is that 'informal' must take its meaning by way of contrast to 'formal.' Yet this point was not made for some time, hence the nature of informal logic remained somewhat opaque, even to those involved in it. To clarify the meaning of 'informal', it is helpful to have recourse to Barth and Krabbe (1982, p. 14f.) who distinguish three senses of the term 'form'.[11] By 'form_1,' Barth and Krabbe mean the sense of the term that derives from the Platonic idea of form, where form denotes the ultimate metaphysical unit. In this first sense of 'form,' almost all logic is informal (not-formal). Certainly neither predicate logic nor propositional logic can be construed as term logics. However, this way of understanding informal logic would be much too broad to be useful. By 'form_2,' Barth and Krabbe mean the form of sentences and statements as these are seen in modern logic. In this sense, one could say that the syntax of the language to which a statement belongs is very precisely formulated or 'formalized'; or that the validity concept is defined in terms of the logical form of the sentences

which make up the argument. By 'form$_3$,' Barth and Krabbe mean to refer to "procedures which are somehow regulated or regimented, which take place according to some set of rules."

In this third sense of 'form,' informal logic can itself also be formal. There is nothing in the Informal Logic Initiative that stands opposed to the idea that argumentative discourse should be subject to norms, rules, criteria, standards and/or procedures.[12] What was opposed was the idea that the criteria for *evaluating all arguments* are to be obtained by reflection on the logical form of the argument.

Fourth, almost from the beginning, many have expressed dissatisfaction with the name 'informal logic,' partly, one suspects, because in English the term 'informal' has the connotation of looseness, of being causal.[13] For some (Hintikka, 1989, p. 13), 'informal logic' is a 'solecism,' because logic must be formal. (See Johnson, 2000, pp. 255–260 for a rejoinder.)

2.2.3. Informal Logic and Critical Thinking

An important development occurred in 1981 when informal logicians made contact with the burgeoning critical thinking movement. Michael Scriven had put Blair in touch with Richard Paul who was hosting a conference on critical thinking in May 1981 at Sonoma State University. There it became clear that there were like mind-minded colleagues in universities across North America and in other fields – e.g., in education, and psychology. From then through the mid-90s, the annual Sonoma conference served as a gathering place for the exchange and development of ideas about critical thinking and informal logic at both the theoretical and pedagogical levels. The second conference on informal logic at the University of Windsor in 1983 gave birth to the Association for Informal Logic and Critical Thinking (AILACT) which continues to this day to promote interest in informal logic and critical thinking by sponsoring yearly conferences, as well as through its essay prize competition.

2.2.4. Informal Logic and Argumentation Theory

The next important development in the Informal Logic Initiative occurred 1983 when Blair made a connection with Frans van Eemeren and Rob Grootendorst, the two Dutch linguists who had developed the Pragma-Dialectical approach to argumentation (1984). Through that connection, it became clear that the Informal Logic Initiative was part of worldwide network of researchers, all interested in the study of argumentation-or what was being called 'argumentation theory.' That term has come to denote a multi-disciplinary approach to the study of argumentation. Many have

argued that any decent theory of argumentation must take into account logical, rhetorical and dialectical perspectives (Wenzel, 1990), with which many agree (but see Blair, 2003) and to which one could easily add linguistic, psychological and other perspectives. Thus it gradually became clear that informal logic is one approach, among many, to the broader inquiry known as argumentation theory.

2.2.5. Summary

The characteristics of the Informal Logic Initiative given in this section allow us to extract key factors that constitute the ideal of logical education within the informal logic movement. Among these factors, we mention the following: (i) teaching the norms that should be crucial in producing, analyzing and assessing arguments; (ii) focusing not only on everyday use of arguments in public discourse, but also on specific types of arguments as they occur in inquiry. This completes our discussion of the Informal Logic Initiative. In the next section, we present an overview in which we will discuss the main contributions of these two movements.

3. Main Contributions of the Two Movements

In what follows we will discuss only those achievements of the two research movements that are relevant to explaining logical culture as an educational goal.

3.1. Some Relevant Contributions of the Lvov-Warsaw School

3.1.1. The Ideal of a Logical Culture

The umbrella term used by some representatives of the Lvov-Warsaw School to denote the knowledge and skills of logic is '*kultura logiczna*' ('logical culture') (Ajdukiewicz, 1965). Since the English term 'culture' immediately points to something much broader than knowledge and skills of logic, when discussing this idea we shall also use the label 'logical education' which more precisely points to the main connotation of the Polish phrase '*kultura logiczna*.' Then we will unpack the general term 'logical education' by pointing to its main components; i.e., (i) knowledge of logic, and (ii) skills of applying this type of knowledge in everyday communication and scientific texts.

The ideal of logical education in the Lvov-Warsaw School tradition may be identified by examining the core concern of this movement, which was

to show the applications of logic in natural language communication. This attitude is explained by Tarski:

> [...] by perfecting and sharpening the tools of thought, [logic] makes man more critical – and thus makes less likely their being misled by all the pseudo-reasonings to which they are in various parts of the world incessantly exposed today (Tarski, 1995, p. xi).

In order to eliminate some possible misunderstandings, let us note that in the above quote, Tarski does not say that those who achieve knowledge of logic and skills of applying it are better reasoners than people who did not study logic. What Tarski says is that logic is a useful tool which (through applying its concepts and distinctions) is helpful in educating people who desire to have a critical attitude towards the flow of information.

Although representatives of the Lvov-Warsaw School did not use terms such as 'critical thinking' or 'critical thinker,' Tarski's idea of logic as a tool for 'making people more critical' may serve as an illustration of the attitude of the Lvov-Warsaw School towards the role of logic as a tool that is capable of helping to shape the critical thinker. We will now explain this observation by further explaining the notion of logical culture.

The main idea behind the term '*kultura logiczna*' in the research of the Lvov-Warsaw School is expressed by Ajdukiewicz as follows: the knowledge of logic is essential in educating people to (1) think more clearly and consistently, (2) express their thoughts precisely and systematically, (3) make proper inferences and arguments and justify their claims (Ajdukiewicz, 1957, p. 3; see also Koszowy, 2010; Groarke, 2011). According to some members of the school, these three kinds of general skills of applying the knowledge of logic should not be restricted to the skills of applying formal logic, but logic broadly conceived as consisting of formal logic, semiotics, methodology of science (Ajdukiewicz, 1974) and also argumentation theory (Kamiński, 1992). We should here observe that even 'strictly formal' logicians of the Lvov-Warsaw School, such as Tarski, stressed the need for making use of logic in everyday communication (see the previous Sect., 2.1.1.). This fact is worth noting because it illustrates that in the LWS, a marriage between the formal and the informal aspects of reasoning and arguments was seen as quite natural.[14] Hence for LWS, the formal and informal approaches were definitely not treated as incompatible, but rather as complementary.

The conception of logical education as developed by LWS thus joins two components: (1) advances in logical studies are claimed to be applicable in (2) teaching logical skills (Czeżowski, 2000, p. 68; Koszowy, 2010).

Thus, the term 'logical culture' (or 'logical education') refers both to the knowledge of logic (as applied in using language and reasoning) and to the skill of applying this knowledge in performing commonsense and scientific reasoning. According to Czeżowski (2000, p. 68): "Logical culture, just as any social, artistic, literary or other culture, is a characteristic of someone who possesses logical knowledge and competence in logical thinking and expressing one's thoughts."

We may observe that this concept of logical culture highlights the value of logical thinking, which is one of the most important values in human individual and social acting (Ajdukiewicz, 1965, Czeżowski, 2000). Logical culture is particularly important for human scientific and argumentative activities, because it involves the logical skill of performing various cognitive and linguistic procedures. Hence, the main point made by Czeżowski is that 'logical skills' are built upon the knowledge of logic. Czeżowski points to these criteria when making further explication of his initial definition by giving a list of procedures that constitute logical thinking:

> Logical thinking is that part of cognitive thinking that processes perceptions and recollections, i.e., knowledge acquired directly from experience; it can be listed in general as the following: describing and defining, ordering and systematizing, explaining, inferring, predicting, proving and verifying (Czeżowski, 2000, p. 68).

The above list of procedures that should be, according to Czeżowski, accomplished in line with norms of 'logical thinking' allows us to define 'logical culture' as follows:

> *S* possesses logical culture if *S* has the ability to apply the rules of (a) describing and defining, (b) ordering and systematizing, (c) explaining, (d) inferring, (e) predicting, (f) proving, and (g) verifying (p. 68).

This account is much broader than the one elaborated within the Informal Logic Initiative (see Sect. 2) and says nothing specifically about producing, analyzing and assessing arguments. However, some inheritors of the school point to the possibility of making use of such skills as inferring (Marciszewski, 1991) and defining (Marciszewski, 1994) in producing, analyzing and assessing arguments (see also Koszowy, 2013).

Apart from particular skills, the notion of logical culture in the Lvov-Warsaw School also encompasses dispositions to assess utterances and reasoning. Although most authors do not explicitly speak about dispositions, the idea of logical culture is linked to the concept of dispositions by say-

ing that the person who has logical culture is disposed to perform certain cognitive activities (e.g. Czeżowski, 2000).

There are at least two example ideas of the LWS that emphasise the role of dispositions in logical education. First, in the passage quoted at the beginning of this section, Tarski writes about making people 'more critical.' This idea may be interpreted as educating a person who is disposed to evaluate language use, reasoning and arguments. Second, the idea of dispositions is present in the writings of Ajdukiewicz. For example, in his (1957) handbook titled *Zarys logiki* (*An Outline of Logic*) Ajdukiewicz talks about building a person who has certain dispositions such as expressing thoughts clearly and reasoning properly. This thought is developed in his paper "Co może szkoła zrobić dla podniesienia kultury logicznej uczniów" ("What school can do to improve the logical culture of students") (Ajdukiewicz, 1965). There Ajdukiewicz points to certain dispositions that are a result of forming a person who has logical culture. Among those dispositions are the abilities to (i) care about the precision of thoughts and utterances expressing those thoughts; (ii) care about the factual order in our thinking and expressing thoughts; and (iii) have a rational (i.e., critical) attitude towards claims and statements (Ajdukiewicz, 1965, pp. 324–325).

To sum up, although the representatives of the school do not make an explicit distinction between skills and dispositions as the components of logical culture[15], their notion of logical culture encompasses dispositions as an important component. Another observation might be that the notion of logical education in the Lvov-Warsaw School is closely related to the notion of knowledge-gaining procedures (e.g. Koszowy, 2013) – what might be associated with views on a specific role of scientific thinking in everyday communication (see, e.g. Woleński, 2013). The procedures listed by Czeżowski are useful for evaluating our thinking and language use, not only in scientific research and debates, but also in everyday discussions (Czeżowski, 2000, p. 75). Moreover, Czeżowski's definition of 'logical' culture points to crucial knowledge-gaining procedures. His claim is that everyone who knows the rules governing these procedures has the skill of thinking logically and that logical thinking is a cornerstone of critical thinking, although the term 'critical thinking' is not explicitly used in Czeżowski's writings.

We believe that the way of conceiving logic manifested in the passage from Tarski's work represents an approach to logic as a tool that makes people more critical (Tarski, 1995, p. xi). Ajdukiewicz and Czeżowski's views on logical culture serve as a platform for calling attention to some additional

affinities between the Lvov-Warsaw School and the Informal Logic Initiative, which discussion will take place after we have discussed each of them.

3.1.2. Logical foundations of teaching

A clear illustration of how the ideal of logical culture discussed in Section 3.1.1. is employed in accomplishing the educational goals of the Lvov-Warsaw School is the Ajdukiewiczian idea of employing the 'logical foundations of teaching' in school education. This idea is an important part of the program of 'pragmatic logic' which is also the English title of Kazimierz Ajdukiewicz's book *Logika pragmatyczna* (Polish edition 1965; translated into English as *Pragmatic Logic*; see Ajdukiewicz, 1974). The core of this idea relies on employing the tools of logic in shaping the knowledge and skills of logical education in school. For Ajdukiewicz, "the task of the school is not only to convey to the pupils information in various fields, but also to develop in them the ability of correctly carrying out cognitive operations" (Ajdukiewicz 1974, p. 1). These passages help to explain why analysis and evaluation of knowledge-gaining procedures and their results are the main goals of pragmatic logic. If teaching students how to reasonably carry out major cognitive procedures aimed at achieving knowledge is one of the main purposes of teaching logic, then pragmatic logic understood as a practical discipline should have, as its foundation, the description of the basic principles of knowledge-gaining procedures. Among these cognitive and communicative procedures are:

(1) Word use: (a) understanding of expressions and their meaning, (b) statements and their parts, (c) objective counterparts of expressions (extension and intension of terms), (d) ambiguity of expressions and defects of meaning (ambiguity, vagueness, incomplete formulations) and (e) definitions (e.g. the distinction between nominal and real definition, definitions by abstraction and inductive definitions, stipulating and reporting definitions, definitions by postulates and pseudo-definitions by postulates, errors in defining).

(2) Questioning: (a) the structure of interrogative sentences, (b) decision questions, (c) assumptions of questions and suggestive questions, (d) improper answers, (e) thoughts expressed by an interrogative sentence and (f) didactic questions.[16]

(3) Reasoning and inference: (a) formal logic and the consequence relation (logical consequence; the relationship between the truth of the reason and the truth of the consequence, enthymematic consequence), (b) inference and conditions of its correctness; (c) subjectively certain inference (the conclusiveness of subjectively certain inference in the light of the knowledge of

the person involved); (d) subjectively uncertain inference (the conclusiveness of subjectively uncertain inference, logical probability versus mathematical probability, statistical probability, reductive inference, induction by enumeration, inference by analogy, induction by elimination).

Ajdukiewicz's central thesis is that logic (consisting of formal logic, semiotics and the methodology of science)[17] constitutes one of the foundations of teaching not only at the university level, but also at the earlier stages of acquiring knowledge in primary and in the secondary school. According to Ajdukiewicz, the logical foundations of teaching can and should be presented not exclusively in separate logic courses, but also during the education process as a whole. It may be thought that this account is very general, but that is exactly Ajdukiewicz's point: logic is conceived as the discipline which contains some general foundations of school and academic education. According to him, logical semiotics (the logic of language) "prepares the set of concepts and the terminology which are indispensable for informing about all kinds of infringements, and indicates the ways of preventing them" (Ajdukiewicz, 1974, p. 3). The methodology of science provides "the knowledge of terminology and precise methodological concepts, and also the knowledge of elementary methodological theorems, which lay down the conditions of correctness of the principal types of cognitive operations, must be included in the logical foundations of teaching" (p. 3). Ajdukiewicz gives an example of a science teacher who informs students about the law of gravitation and its substantiation by explaining how Newton arrived at the formulation of the law:

> When doing so, he will perhaps begin by telling pupils that the said law was born in Newton's mind as a *hypothesis*, from which he succeeded to *deduce* the law which states how the Moon revolves round the Earth and how the planets revolve round the Sun, the law which agrees with observations within the *margin of error*. That agreement between the *consequences* of the said hypothesis with empirical data is its *confirmation*, which Newton thought to be sufficient to accept that hypothesis as a *general law* (p. 2).

Thus, according to Ajdukiewicz, the role of the methodology of science in the foundations of teaching is revealed by the fact that crucial terms such as 'hypothesis,' 'deduction' or 'verification of a hypothesis' are, in fact, methodological, and this is why they are useful in the process of achieving knowledge.

However, pragmatic logic is to be applied not only to scientific research or at school, but also to everyday speech communication. As Ajdukiewicz states, "pragmatic logic is not the opposite of formal logic, but rather the

formal and pragmatic components (of logic) complement one another. Moreover, pragmatic logic is much more useful for the teacher, who aims – among other things – at training students to make statements that are relevant, unambiguous and precise, which is one of the principal tasks of school education" (Ajdukiewicz, 1974, p. 3).

3.1.3. Knowledge-Gaining Procedures

The core concern of the Lvov-Warsaw School was to combine the 'positive' part of inquiry – aimed at establishing the set of rules for critical thinking – with the 'negative' part of fallacies – conceived as common pitfalls of non-logical thinking. This idea relies on proposing the model based on the rules of performing various knowledge-gaining procedures. In what follows, we call these rules 'methodological,' for rules for performing some typical knowledge-gaining procedures are investigated by the general methodology of science. Among these procedures the most significant are: reasoning, questioning, defining, classifying objects, and formulating and testing hypotheses (Czeżowski, 2000, p. 68).

The methodological framework for the knowledge-gaining procedures can be found within the program of pragmatic logic proposed by Ajdukiewicz (1974). The term 'pragmatic logic' refers to a discipline aimed at applying logic (in a broad sense) in analyzing and evaluating knowledge-gaining procedures. In this respect, pragmatic logic is comparable to informal logic. The program of pragmatic logic is also based on the idea that general (logical and methodological) rules of scientific investigation should be applied in everyday communication. In this respect, pragmatic logic differs from informal logic. The 'pragmatic dimension' of this approach relies on moving from the *practice* of researchers towards formulating methodological standards (rules, norms) of performing various knowledge-gaining procedures:

> The standards of correctness of research procedures, as formulated in methodology, are not dictated by it to researchers in advance. Such standards are derived from practical activities of competent researchers, who approve of some procedures in research, they disapprove of others. [...] In other words, competent researchers develop, as a result of their practical activities, what might be termed a research conscience, but they do not always clearly realize the principles by which that 'conscience' of theirs is guided (Ajdukiewicz, 1974, p. 187).

Ajdukiewicz specifies this general idea by analyzing various cases of: (1) word-use, (2) questioning, (3) reasoning and inference, and (4) method-

ological types of sciences such as deductive and inductive sciences. On the basis of this framework, a unified set of methodological rules may be determined (see Koszowy, 2010, pp. 37–38).

One example of a procedure investigated in this framework is that of defining. Two types of rules for defining may be distinguished: structural and pragmatic. Structural rules tell us what the proper structure of a given kind of definition should be. As examples of such structural rules, the following may be mentioned (see, e.g. Czeżowski, 2000, pp. 68–69):

(1) A definition should not be circular: in the case of an explicit definition, the word defined (*definiendum*) must not be used in the *definiens*.
(2) The extensions of the *definiendum* and *definiens* of a lexical definition must be identical.
(3) A definition should not be too broad: the extension of the *definiens* of a lexical definition must not be superior to the extension of the definiendum.
(4) A definition should not be too narrow: the extension of the *definiens* of a lexical definition must not be inferior to the extension of the *definiendum*.
(5) A definition should not be negative if it can be affirmative.

The second type of rules are pragmatic rules of defining that concern the content of a good definition. They are applied to identify such errors of defining as *ignotum per ignotum* ('defining an unknown by another unknown', i.e. when one technical term is defined using yet another technical term that is likely to be also uncommon to the audience), or confusing various kinds of definitions. There exists a variety of pragmatic rules. As examples of such rules, the following may be mentioned (see, e.g. Ajdukiewicz, 1974, Ch. 5):

(1) Descriptive definitions should not be confused with normative ones.
(2) Lexical definitions should not be confused with stipulative ones.
(3) Real definitions should not be confused with persuasive ones.
(4) In a real definition only essential attributes of the defined object should be included.
(5) Among the essential (or relevant) attributes, we should choose the constitutive ones (those which determine the whole).

In line with methods of evaluating definitions that have been discussed in informal logic (e.g., Walton & Macagno, 2010), the rules extracted from the works of Czeżowski and Ajdukiewicz may be employed as a model of evaluating definitions in argumentation. In order to exemplify some applications of this model, let us suppose that two parties debate whether any restric-

tions on access to the Global Information Infrastructure (GII) are justified (see Koszowy, 2013, pp. 27–30). Let us also suppose that both parties agree that the GII is a source of information. The party that is skeptical about any restrictions on the Internet advances the following definition: "the term 'knowledge' in its common use refers to the sum of information." After formulating this definition, let us suppose that the party proceeds by advancing this argument:

If 'knowledge' refers to the sum of information, the more information we collect, the more knowledge we possess; and as we all know, the Internet allows us to gather various kinds of information, so it gives us an excellent opportunity to extend our knowledge of the world. Therefore, access to the GII should not be restricted.

The issue is resolved if this definition of the term 'knowledge' is accepted. Nobody disagrees that we have the right to search for knowledge. So there is no reason to restrict access to the GII if it gives us knowledge. However, in this argument, the methodological rule to distinguish between a lexical definition of the term as commonly understood in a given language, and a stipulative definition which projects the meaning of a given term (Rule 2 on the list of pragmatic rules), has been breached. An attempt at defining 'knowledge' as a simple sum of information is a case of projecting the meaning of the term 'knowledge.' Then, this definition plays a persuasive role in the argument.

In summary, we see that the important contributions of LWS are systematic attempts at elaborating rules for performing most typical knowledge-gaining procedures such as conceptualizing, defining, reasoning and classifying objects.

3.1.4. Fallacies as Pitfalls of Reasoning

The systematic study of the logical fallacies was organically connected with popularizing the ideal of logical education in Poland. Apart from the 'positive' goal of improving knowledge and skills of logical culture, the 'negative' part of inquiry was to identify typical fallacies in speech communication and reasoning. This general attitude to study fallacies as arising from the core of the logical tradition may be seen as similar to Informal Logic. The common tendency of the study of the fallacies in the Lvov-Warsaw School manifests itself in the optimistic claim that the study of the common mishaps of language use, reasoning and argumentation helps one to become aware of the typical cognitive and linguistic mechanisms of arriving at error. The authors believe that this pragmatic and cognitive motivation for un-

dertaking the systematic study of the fallacies is very similar in the case of the Informal Logic Initiative. Moreover, the tradition of the Lvov-Warsaw School tends to avoid the 'naive' fallacy approach which consists in identifying fallacies by employing the catalogue of typical fallacies. Instead, it aims at proposing concrete rules for correct thinking and language use.[18] In this respect, there is a common point of reference with the approach found in the Informal Logic Initiative where the authors propose a set of defining conditions for each fallacy.

An exemplification of the general treatment of the fallacies in the Lvov-Warsaw School is Kamiński's taxonomy of logical fallacies (Kamiński, 1962, pp. 29–39; Koszowy, 2012, pp. 34–40). Kamiński distinguishes four general types of logical fallacies, namely epistemological fallacies, semiotic fallacies, fallacies of reasoning ('logical fallacies in a strict sense'), and methodological fallacies understood as violations of some of the rules that govern knowledge-gaining procedures. This systematization may be conceived as a unifying account which aims to explain a variety of violations of the rules of proper cognition.

Another exemplification of the common tendencies in the study of the fallacies are Bocheński's analyses in *One Hundred Dogmas* (1994). Bocheński's account of common dogmas in thinking has a pragmatic dimension, because his main motivation is to help people to recognize typical mechanisms commonly employed in the social sphere in order to convince someone to accept false beliefs. Moreover, superstitions are not only described exclusively from the *inferential* perspective (by detecting errors in reasoning), but also from the *dialogical* point of view (by identifying typical moves in the dialogue which are employed in order to spread superstitions in the social sphere), as well as within the *rhetorical* approach (by analyzing utterances aimed at convincing someone to accept a superstition). Hence, Bocheński's studies of superstitions clearly refer to the broader (i.e. social, cognitive and communicative) context.

For example, one typical dogma in thinking discussed by Bocheński concerns the appeal to authority (Bocheński, 1994, pp. 24–26; see also Koszowy & Araszkiewicz, 2014). The key part of Bocheński's theory of authority (Bocheński, 1974, Ch. 4) is the distinction between 'epistemic authority' and 'deontic authority'. This ambiguity of 'authority' is also discussed by Walton (1997, Ch. 3) as the distinction between cognitive (*de facto*) and administrative (*de iure*) authority (see also Budzynska, 2010).

Koszowy & Araszkiewicz (2014) proposed to reconstruct Bocheński's analyses of dogmas concerning authority by identifying them as by means of argumentation schemes for fallacious arguments. Argumentation scheme

theory conceives argumentation schemes as typical forms of argument that capture stereotypical patterns of human reasoning. In their work on argumentation schemes, Walton, Reed and Macagno (2008) have distinguished typical schemes with matching sets of critical questions that are employed within the procedure of evaluating arguments. For instance, arguments represented by the scheme 'argument from position to know' take the following form:

Major Premise: Source a is in a position to know about things in a certain subject domain S containing proposition A;

Minor Premise: a asserts that A (in Domain S) is true (false);

Conclusion: A is true (false).

This conclusion may be evaluated by asking the following critical questions: Is a in a position to know whether A is true (false)? Is a an honest (trustworthy, reliable) source? Did a assert that A is true (false)? (Walton, Reed and Macagno 2008, pp. 87–93). The idea proposed by Koszowy and Araszkiewicz (2014) points to the possibility of employing this account to build argumentation schemes (for fallacious reasoning) that would represent typical dogmas in thinking described by Bocheński.

3.1.5. Summary

As this section has shown, the 'doctrine' of logical culture (as emphasized by Ajdukiewicz and Czeżowski) constitutes clear evidence of the broader treatment of logic that: went beyond a purely deductive account; was related not only to the knowledge of logic (broadly conceived), but also to logical skills and dispositions;[19] was connected with the conception of logic as the art and science of good reasoning and expressing thoughts; and had, as its key component, skills and dispositions to identify fallacious reasoning and language use. We believe that these features of the logical culture project constitute a good reason to further explore the concept of logical culture as a key commonality between the Lvov-Warsaw School and the Informal Logic Initiative. In what follows we will make this commonality more explicit. This will become clearer when we have discussed the contributions of the Informal Logic Initiative.

3.2. Important Contributions of the Informal Logic Initiative

A great deal could be said about contributions from Informal Logic[20] in each of the categories set forth below. Here we will be able to only briefly touch on a few significant points.

3.2.1. The Reconceptualization of 'Argument'

One of the contributions of Informal Logic has been to stimulate thinking about questions like: "What is meant by 'argument'?" The Informal Logic Initiative has called attention to what a rich construct 'argument' is, allowing, as it does, for a great many different articulations (see Hitchcock, 2006). The standard definition of 'argument' in logic textbooks was that an argument is a set of premises that support a conclusion, typically with no reference to purpose. But informal logicians pointed out that argument serves many different functions or purposes: to justify, to persuade, to reinforce, etc.

One important implication of this approach to the definition of 'argument' is to further reinforce the point that it is important not to conflate 'argument' with any of the concepts that are related to it: especially, 'inference,' 'implication,' and 'reasoning.'

3.2.2. Extension of the scope of argument

Another result of the Informal Logic Initiative has been a concerted effort not simply to develop a more robust understanding of argument, but as well to extend the range of the term 'argument.' Traditionally, logic has tended to focus only on verbal arguments encoded in text. One of the first challenges to this limitation comes from Groarke (1996): What about visual argument? Groarke argued that visual arguments should be embraced if we are interested in helping our students become visually literate and also in order to avoid the privileging of the verbal. Gilbert (1997) argued for inclusion of emotional arguments as well as kisceral (intuitive) and gestural (accomplished by gestures) arguments. These investigations would not be possible to develop within the confines of formal deductive logic, nor indeed informal logic as it first emerged.

The 'logical conclusion' of this desire to broaden the application of 'argument' is perhaps best captured in the title of the book *Everything's an Argument* (2003) which view, however, as the authors of that work readily acknowledge, is an overstatement. The point to stress here is that the Informal Logic Initiative helped open the door to these attempts at 'expanding the construct' beyond traditional boundaries.

While informal logicians have tended to focus on arguments as products, (particularly as they occur in natural language settings like editorials and journals), it is also possible to view an argument as a process – as a dialogue between two parties. Here the focus will not be on criteria but rather on rules. Modern dialogue logics emerged in the second half of the 20th century (Lorenz & Lorenzen, 1978) as a solution to some of the problems of operative

logic (Lorezen, 1955). Partly as a result of the influence of pragma-dialectics (van Eemeren & Grootendorst, 1984; 1992), informal logicians have become increasingly attentive to the dialogical approach to argument. In *The New Dialectic* (1998), Walton offers a dialogical approach which puts an emphasis on a more explicit exposition of dialectical aspects of argumentation. Such developments illustrate the pluralism that characterizes the study of argument by informal logicians.

3.2.3. Developments in the typology of argument

From the onset, informal logic questioned the traditional distinction between inductive and deductive: both as to how it is drawn and whether or not it is exhaustive. Gradually the belief developed that was that there was a third type of inferential connection – neither deductive nor inductive.[21] Here perhaps the most important development was the introduction by Govier (1980) of the notion of a *conductive argument*, which she takes from Wellman (1971), but develops in her own manner (1987). In a conductive argument, the inferential connection is not deductive; the conclusion does not follow necessarily; and it is not inductive, the conclusion does not follow with some degree of probability. In a conductive argument, the premises provide good reasons for the conclusion. While there is no consensus how to further characterise conductive argument, there is general agreement that one prominent type of conductive argument is the 'balance of considerations' type of argument.[22] From the beginning, there has been discussion regarding what kind of argument informal logic is about. Very clearly it is not about deductive arguments; that is what deductive logic is about. Nor is it about inductive argument; that is the subject matter of inductive logic. Various candidates have been proposed along the way: real arguments, natural language arguments, mundane arguments and even conductive arguments. Perhaps the easiest way to phrase this is that the focus of informal logic is what Woods called 'arguments on the hoof' (Woods, 2006, p. 302) by which is meant 'arguments as they actually occur in real life.'

3.2.4. Standards for the evaluation of arguments

According to those who approach these matters from the perspective of formal deductive logic, there are two standards for a sound argument: the premises must be true; and the argument must be valid; that is, it must follow necessarily from the premises. (This is known as 'the soundness doctrine'). Then one posits that soundness is both necessary and sufficient for a good argument. Challenges to this view have been mounted by Govier (1987) and Johnson (2000) and Hitchcock (2006), among oth-

ers. In brief, they argue that soundness is neither necessary nor sufficient for a good argument. It is not necessary because there are good inductive arguments. It is not sufficient because we can have a good argument with premises that are acceptable, even if they are not true.

One of the tasks faced by informal logicians was to develop standards for the evaluation of an argument. This approach originated when Johnson and Blair identified the standards that were implicit in the fallacy approach. That is, they looked at the traditional fallacies and asked themselves: what standard is violated in this fallacy? Reflection led them to the view that a good argument is one that satisfies the standards of relevance, sufficiency and acceptability (RSA). According to this approach first developed in Johnson and Blair's *Logical Self-Defense* (1977; 1983), the premises must be individually relevant, jointly sufficient, and acceptable. This approach was subsequently adopted by Govier in *A Practical Study of Argument* (1985) and re-baptized as the ARG (Acceptable, Relevant, Grounds) condition. Since then, a number of those who work in informal logic have adopted some variation of this approach (see Johnson 2000, p. 137, ff.).

Two riders may be added. First, it should be noted that Johnson later argues for an approach that includes truth as an additional criterion (2000, p. 195 ff.). Second, it is noteworthy that this approach was not arrived at by the attenuation of the standards proposed by formal logic-validity and truth; it was rather by generalizing the norms that were implicit in the fallacy approach to the criticism of argument.

In his (1996), Hitchcock criticized the RSA approach for its failure to provide clear accounts of the standards of relevance, sufficiency and acceptability. It is true that there is no widely accepted theory of relevance, though that does not mean that there have not been important strides in our understanding of this standard. The rich literature on relevance has been developed in the last 20 years by informal logicians and argumentation theorists: Walton (1982); Hitchcock (1992); Blair (1992); Bowles (1989); Woods (1994) and Woods and Gabbay (2002). It is likewise true that there is no theory of sufficiency; Blair (1992, 2007a) thoroughly discusses this matter. Regarding acceptability, the literature is fairly extensive. We recommend the treatment found in Freeman (2005) *Acceptable Premises: An Epistemic Approach to an Informal Logic Problem*.[23]

3.2.5. Dialectical obligations

One final issue to mention here is that of the *arguer's dialectical obligations*. The easiest way to frame this matter is to invoke the commonplace that one key indicator of a good argument is that it can withstand strong

objections. Often an argument will elicit a response of some sort, a criticism or an objection. It seems that the arguer has some sort of obligation to respond to such criticisms and/or objections. That is part of what is meant by a dialectical obligation. However, this important matter has not received the attention it deserves. There is no developed theory of dialectical obligations.[24]

3.2.6. Fallacies

From its inception, Informal Logic has been strongly associated with the fallacies – teaching students how to detect, and avoid committing fallacies in their arguments. In his famous 1970 book, *Fallacies*, Hamblin criticized fallacy theory as it had developed in the textbook tradition. That critique functioned as a challenge. Among those responding to that challenge were Douglas Walton and John Woods, who in the 1970s co-authored a series of papers[25] in which they showed that the individual fallacies were susceptible of better treatment than the sort of 'debased, worn-out, and dogmatic treatment' (1970, p. 12) of which Hamblin had complained. Their pioneering work persuaded many that the fallacies were a legitimate topic for inquiry and research. Since that time, there has been ongoing interest in the fallacy tradition (see Hansen and Pinto, 1995). Walton has authored a number of monographs on the individual fallacies, among them *Begging the Question* (1991), *Appeal to Expert Opinion* (1997), and *Ad Hominem Arguments* (1998). These monographs are important because not only do they synthesize the work that had been done by Walton, Woods and others, but also because they opened the eyes of many outside informal logic to the intellectual merits of the fallacy tradition. Having said this, we must note that alongside this development runs a resistance movement that takes the form of questioning whether there really are fallacies (Finocchiaro, 1981; Massey, 1981; Adler, 1994).

In spite of continued, and often justified, criticism of how they have been presented historically, the fallacies continue to be an object of both practical and pedagogical interest, as well as historical and theoretical reflection, for informal logicians and argumentation theorists.

3.2.7. Summary

The Informal Logic Movement has focused on the many dimensions that arguments have: the nature of argument, the extension of the term 'argument,' the issues of typology of argument and the standards for their evaluation. Perhaps what distinguishes it most from Formal Logic is the focus on the arguer's dialectical obligations; moreover, the Informal Logic

Movement has been more engaged in presenting the traditional fallacies in a new light.

4. Comparing the two approaches

Having discussed features of the Lvov-Warsaw School and the Informal Logic Initiative, in what follows we will answer the question: Are there other interesting similarities between them? We believe that ILI and LWS each have a theoretical core out of which developed both a pragmatic and pedagogic orientation.

Our claim is that despite the differences, there are two features that indicate a common research mission between them. First, both approaches agree about the need to elaborate methods that would allow students to analyse and evaluate language use and reasoning. Second, both approaches take seriously the need for systematic study of the fallacies as derailments of language use and reasoning. The Lvov-Warsaw School approach is imbedded in the Polish philosophical culture where formal logic plays a crucial role. The Informal Logic Initiative developed in North America out of a pedagogical focus: the desire to find a way to introduce students to logical reasoning that did not rely upon the methods of formal logic.

4.1. Exploring the commonalities in the two traditions

In order to pave the way for showing the affinities between the two logical traditions, in what follows we argue that both the Lvov-Warsaw School and the Informal Logic Initiative subscribe to (i) a broad notion of logic (Johnson 2009; Koszowy 2010), (ii) a pragmatic account of language and argument, (iii) a rule of conceptual precision, and (iv) logical foundations of teaching.

(i) *A broad notion of logic.* One crucial resemblance between the Lvov-Warsaw School and the Informal Logic Initiative lies in their common belief that logic is not equivalent to formal logic. As Johnson points out, the tendency to tailor the concept of logic exclusively to formal deductive logic is inadequate because it "cuts off logic from important parts of its historical development" (Johnson, 1996, p. 79). Within the Lvov-Warsaw School, the focus on formal models of language and reasoning does not entail the claim that logic is equivalent to formal logic. On the contrary, the representatives of the school employed a broad conception of logic that embraces not only formal logic, but also other disciplines that investigate language and major

knowledge-gaining procedures in the sciences and in the humanities (see e.g. Ajdukiewicz, 1974, p. 2–4; Koszowy, 2010, pp. 32–33). According to some members of the Lvov-Warsaw School, the source of logical knowledge lies in three branches of logic: formal logic, semiotics, and methodology of science (Woleński, 1989, pp. 81–82).[26] On their basis, key logical skills may be developed. First, formal logic helps to identify some formal fallacies in reasoning (such as affirming the consequent and denying the antecedent). Second, semiotics may be applicable in analyzing utterances in order to seek for typical fallacious language uses such as those caused by ambiguity of phrases. Lastly, the methodology of science may be employed in assessing results of some typical knowledge-gaining procedures such as sampling, generalizing and statistical reasoning. The consequence of accepting this broad account is that the concept of 'logical skills' encompasses not only the skills of employing formal tools in language analysis, but also the skills of using the conceptual apparatus of semiotics to analyze natural language discourse, and using methodology of science in evaluating definitions (see Koszowy 2013), classifications, and questions occurring in the scientific inquiry. An example illustrating the possibility of treating the broad notion of logic as a common factor that may bring together the analyses of language and reasoning from both research perspectives is Hołówka's book *Kultura logiczna w przykładach* (*Logical Culture in Examples*) (Hołówka 2005). This work proposes methods of analysing example utterances that describe a person who possesses logical culture. These analyses are organised according to the main parts of logic in the broad sense, namely (1) the logical analyses of utterances, (2) the logical schemes, (3) analytic and logical relations between statements, (4) definition, (5) reasoning, and (6) arguments and controversies. Apart from analyses that are typical for the Lvov-Warsaw School's analytic approach to language and reasoning, they also contain some analyses that are typical for Informal Logic (see e.g. Walton 2008, Ch. 8–9)[27]. Both example works can be treated as instances of employing a broad paradigm of logical analyses of language, reasoning and arguments.

(ii) *A pragmatic account of language and argument.* One feature of informal logic is the pragmatic approach to arguments (e.g. Johnson, 1996, pp. 103–106; Walton, 2008, p. 2). According to Johnson, the informal logic approach to argument is pragmatic because it stresses the purposes of argument rather than the structure. The Lvov-Warsaw School employs a similar approach. A clear example of including pragmatic perspective in the philosophy of language and argument are Twardowski's views on symbolization in logic discussed in his paper "Symbolomania and pragmatophobia" (Twar-

dowski, 1965). The point of departure of Twardowski's analyses is the critique of the view (defended, among others by Łukasiewicz and Leśniewski) which holds that symbolization in formal logic is the exclusive source of precision and clarity of language. According to Twardowski, this radical view called by him 'symbolomania' focuses on pure symbols without taking into account their uses. Symbolomania is in line with another attitude labelled by Twardowski 'pragmatophobia' (understood as a fear of or reservation toward approaching language and reasoning from a pragmatic perspective) which tends to avoid any considerations concerning objects which are represented by symbols:

> The tendency to place symbols above things may result in bending things to comply with symbols, that is, making statements about things according to what follows from symbol-based assumptions and operations, regardless of what things tell us about themselves, or even contrary to what they tell us about themselves (Twardowski, 1965, p. 5).

As Smith (1994) observes, Twardowski's motivation for the critique of 'symbolomania' and 'pragmatophobia' lies in his efforts to give an adequate account of cognitive processes:

> Mental processes ought, as it were, by guiding the successive stages in the process of production, to ensure that a meaning of an appropriate kind is capable of being bestowed upon its products and thereby also ensure that these products do not depart from the world of things (Smith, 1994, p. 186).

It might be a matter of some interest that a criticism similar to Twardowski's was expressed by Michael Scriven in his talk given during the First Informal Logic Symposium. According to Scriven:

> To begin with, the emergence of informal logic marks the end of the reign of formal logic. Not by any means the end of the *subject*: just its relegation to the proper place in the academic zoo, somewhere over there just north of mathematics and west of computer science; and far away from the children's part of the zoo. It's not good for children to see too much of the monsters part of the zoo; it warps their little minds, and gives them dread diseases like Meinong's syndrome and the quinea and the kripkes. They grow up into poor little perverts who...mutter things like "p is true if and only if p," then smile beatifically. Or they go around chanting "A false proposition implies any proposition; yes it does, yes it does..." (Scriven, 1980, p. 147).

In their criticism of certain aspects of formal logic, then, we find another point of convergence between these two traditions.

(iii) *A rule of conceptual precision.* One of the main features of the informal logic approach to the analysis and evaluation of arguments is the clarification of meaning (Johnson, 1996, p. 55–57 and 68–69): the appropriate attitude in analyzing and evaluating arguments is to be sensitive to questions of language and meaning. The same postulate lies at the very core of the methodological program of the Lvov-Warsaw School. Twardowski and his students believed that solid analysis of the uses of language is the point of departure for solving philosophical problems in the most reasonable way. For example, Twardowski claimed that one of the reasons for common misunderstandings in philosophical discussions lies in the fact that the statements in a discourse are usually not sufficiently clear because of the use of some ambiguous expressions. Thus, the key goal of the analysis of philosophical problems was to formulate a given concept or statement as clearly as possible in order to avoid an obscure style in thinking and expressing thoughts. This 'rule of conceptual precision' is one of the methodological rules observed in the tradition of the Lvov-Warsaw School (Jadacki, 2009, p. 69).

Most of the similarities discussed in this section point to the general common goal, which is to build a person who possesses logical culture. This general aim consists of particular goals such as those of employing logic as a tool for shaping (i) precise thinking and (ii) correct performance of knowledge gaining procedures such as defining and reasoning; (iii) the ability to argue well for one's position; As, in each tradition, these similar goals are accomplished by employing diverse methods, in the next section (4.2.), we focus on some of the methodological differences between the two approaches.

4.2. Exploring key differences

The key differences between the two traditions reside in the fact that their similar goals (discussed in section 4.1) are accomplished using diverse methods. Among these particular differences, we note that there are different attitudes towards employing methods of (i) philosophy, (ii) formal logic and (iii) the study of the fallacies.

(i) *Philosophical methods*

An important difference the two movements lies in their general research profiles. Whereas the representatives of the LWS were interested in elaborating tools for solving detailed philosophical problems (see e.g. Woleński, 2010), informal logicians are not especially interested in solving philosophical problems as such, but rather providing people with the

tools to deal with the problems that confront humans insofar as they are part of a society.

(ii) *Formal logic*

In Section 4.1. we discussed a similar pragmatic approach to language and reasoning in both traditions. However, there is a significant difference regarding the strength of emphasis on pragmatic components of communication. In the Lvov-Warsaw School there was a strong formal-logical movement that manifested itself in the activity of the Warsaw School of Logic (see e.g. Woleński, 1995). This is one of the reasons that some representatives of the school such as Łukasiewicz (e.g. multi-valued logic) and Leśniewski (e.g. Leśniewski's systems: protothetic, ontology and mereology) were enthusiastic about employing tools of formal logic in solving particular philosophical problems as well as in building logical culture. Also to be noted is the fact that the Lvov-Warsaw School was the broader analytical enterprise which employed not only formal-logical methods in the analyses of philosophical problems, but also methods of semiotics as well as those of the methodology of science. Thus a key difference between these two development is this: whereas the Lvov-Warsaw School employed formal logic as a (fundamental) part of the broader repertoire of devices, the Informal Logic Initiative was unhappy with formal logic and that led to the development of Informal Logic as a new discipline.

(iii) *Fallacies*

Due to putting a strong emphasis on developing methodology and philosophy of science, the Lvov-Warsaw School elaborated methodological tools that allowed researchers to analyse and evaluate utterances and arguments. The Informal Logic Initiative put an emphasis on pragmatic criteria of argument analysis and evaluation. This difference manifests itself in significantly different conceptual frameworks that have been employed by each tradition in the study of the fallacies. Whereas the representatives of the Polish school emphasized that fallacies are violations of the methodological rules that govern key knowledge-gaining procedures such as defining, reasoning and questioning, the Informal Logic Initiative employed three pragmatic criteria associated with the RSA triangle: relevance, sufficiency, and acceptability.

In the 70s, Johnson and Blair had begun teaching their Applied Logic course using Kahane's *Logic and Contemporary Rhetoric*. They did not like Kahane's treatment of individual fallacies. They did not agree with his way of classifying fallacies: Fallacious because invalid; Fallacious even if valid.

They thought that this approach undermined an informal logic approach that did not take validity as the central normative concept.

Johnson and Blair were aware of the many different ways that fallacies had been classified, going back to Aristotle's distinction between fallacies *extra dictionem* and fallacies *intra dictionem* (1980). They were not happy with any of the various more recent attempts at classification because they seemed rather arbitrary. They believed that the basis for a decent classification could only be found by reference to the implied criteria; i.e., that is, to call an argument fallacious is to accuse it of having violated some criterion (or standard); and they believed that those criteria could be extrapolated from the various fallacies. They also believed that it was clear that the fallacy of Irrelevant Reason (*non-sequitur*) violates the requirement that the premises be relevant. They also judged that what was called 'jumping to a conclusion' (or 'hasty conclusion') – must violate the criterion of sufficiency. They also believed that both were needed; that although, in a sense, relevance is part of sufficiency (a judgement of sufficiency or insufficiency presupposes relevance), an argument that contains an irrelevant reason fails for a different reason than an argument that contains reasons which, though relevant, are not sufficient.

That left fallacies like inconsistency, suppressed evidence, vagueness. Traditionally, under FDL, these fallacies would have probably been said to violate the truth requirement. But Johnson and Blair were uncomfortable with that view and instead proposed acceptability as the third criterion. They then reviewed the individual fallacies and showed that each fallacy could be seen as a violation of at least one of the three criteria; and that some, like two wrongs, could be a violation of either relevance or sufficiency, depending on the specific situation.

4.3. Summary

Despite differences concerning the appreciation and application of formal methods of argument analysis and evaluation that we have just discussed, we need to note that both of these movements, the Informal Logic Initiative and the Lvov-Warsaw School, share a common research mission: i.e., to develop a normative account of argumentation that consists of two indispensable components of inquiry. The first is systematic exploration of the principles for proper reasoning and argumentation; the second is a systematic presentation of typical fallacies, understood as violations of those principles. Further both movements are shaped by concern that the logic students learn can be integrated into their intellectual toolbox.

5. Concluding remarks

We now turn to the orienting question that gave rise to this paper: What are the similarities between the informal logic approach in North America and the Polish analytical tradition? As we have shown, we believe that they are to be found in the common interest they have: to insure that Logic is deployed in a coherent research and education program which is to be instrumental in educating people to express their thoughts clearly and precisely and reason correctly.

Although the researchers of the Lvov-Warsaw School did not use the term 'informal logic,' we may observe that the school elaborated its own ideal of informal analyses of language and reasoning. The possible key to grasp the 'informal' part of the heritage of the Lvov-Warsaw School is the broad understanding of 'logic,' according to which logic encompasses not only formal logic, but also semiotics and methodology of science (see Johnson, 2009; Koszowy, 2010). Accepting this notion of logic would entail conceiving 'logical skills' also in a broader way. These skills would consist of (i) formal logical skills such as identifying formal fallacies in a discourse, (ii) skills of using tools elaborated in semiotics, e.g. language and methods for analyzing and evaluating utterances, and (iii) in the methodology of science, e.g. tools for developing and evaluating definitions, classifications, and questions (Koszowy 2010, p. 32).

Another commonality is the role that fallacy is assigned in their respective approaches to the teaching of logic. For Informal Logic, the study of the fallacies is a central feature. Those who follow Johnson and Blair insist on teaching students about the fallacies in a more systematic way, organized around the view that a fallacy is a violation of the norms of good argument and then spelling out those norms as relevance, sufficiency and acceptability. Moreover, their approach requires that those who charge an argument with fallacy must themselves produce an argument that will typically take the form of showing that the conditions for the occurrence of that fallacy are satisfied in the case under consideration. For the Lvov-Warsaw School, the study of the fallacies is crucially important because of the normative concern to elaborate norms (principles, criteria) that would allow us to use language and reason properly. This 'positive' aspect of treating logic as a tool that helps in educating people to think, reason and use language is followed by the 'negative' part, namely by justifying the need for the study of the fallacies understood in general as typical violations of those rules. In other words, elaborating rules for performing the main knowledge-gaining procedures (such as conceptualizing, defining, reasoning,

classifying objects etc.) is followed by the study of typical pitfalls of analytical thinking.

Though we have here focussed on the affinities between the Informal Logic Initiative and the Lvov-Warsaw School regarding the study of language, reasoning and argument, we acknowledge as well that there are significant differences between them. We have already mentioned their different attitudes to formal logic (p. 28). For example, The typical approach to logic in the Lvov-Warsaw School consisted in (i) linking logic to philosophy, (ii) linking the criteria for correctness of language, reasoning and argument to the rules of performing knowledge-gaining procedures elaborated by methodology and philosophy of science, and (iii) linking argument analysis and evaluation with logic (broadly conceived).

The typical approach to logic in the Informal Logic Initiative consists in exploring how fallacies undermine the norms for good argumentation, and in showing how fallacies can be detected and analysed. Those who developed informal logic believed that a different logic was needed – a logic that was not formal in the sense that it revolved around the notion of logical form and deductive reasoning. They believed it would be an informal logic, closely allied with the aim of teaching students how to distinguish between good and bad argumentation using fallacy theory as the framework.

These differences should not, however, blind us to the important areas of resonance between these two traditions. Despite different geographical, historical and methodological circumstances that influenced the rise and development of both movements, the affinities observed in this paper are definitely not marginal, rather they may be found at the very core of both traditions, and they may be claimed to constitute the *raison d'etre* of both movements. This affinity seems to the authors to be a remarkable chapter in the history of logic that we have attempted to document in this paper.

To conclude: in this paper we have explored what we believe are some intriguing similarities between these two approaches – the Informal Logic Initiative and the Lvov-Warsaw School – to the ideal of logical culture, as was suggested by Groarke in his entry in the *Stanford Encyclopedia of Philosophy*. Our exploration is mindful of the fact that there remain significant differences between these two logical initiatives, such as a different treatment of the scope of applying formal methods in the study of language and reasoning, and a significantly different emphasis on employing methodology of science in developing logical culture. Without minimizing these differences, we yet believe that there are intriguing similarities between these two initiatives that developed independently of each other in

different historical circumstances. That is what we hope to have shown in this paper.

Acknowledgements

Marcin Koszowy would like to acknowledge that the work reported in this paper has been supported in part by the Polish National Science Centre under grant 2015/18/M/HS1/00620.

NOTES

[1] AILACT: Association for Informal Logic and Critical Thinking was founded in 1989 at the end of the Third International Symposium on Informal Logic held at the University of Windsor.

[2] Although the present paper focuses of the logical wing of the Lvov-Warsaw School, for the sake of grasping its general 'Geist,' it seems to be also worth observing that the school had a much broader enterprise. Woleński emphasizes this point in his entry on the school published in the *Stanford Encyclopedia of Philosophy*: "In 1939, the entire school comprised about 80 scholars working in all branches of philosophy as well as in other academic fields, like psychology, sociology, theoretical linguistics, history of art and literary studies" (Woleński, 2013).

[3] J. Woleński, "Lvov-Warsaw School" (2013).

[4] The links between some formal-logical ideas of the school and the development of the study of argument and computation are discussed in (Reed and Koszowy, 2011). For a discussion of how some informal-logical ideas of the school may serve as a source of inspiration for argument studies see (Koszowy and Araszkiewicz, 2014).

[5] Johnson introduced the abbreviation FDL – formal deductive logic – in his (1987). For a critique of Johnson's views, see Woods (2004).

[6] By 'real argument', Johnson and Blair have in mind the types of argument that appear in everyday discourse; in newspaper editorials, opinion pieces etc. However, further discussion of this matter goes beyond the scope of this paper. Recent discussions of what 'real argument' means can be found in Goddu (2009) and Hamby (2012).

[7] Hickel was then the Secretary of State.

[8] "Living next to you," Trudeau told an American audience in a speech to the National Press Club in 1969, "is like sleeping with an elephant; no matter how friendly and even-tempered is the beast, one is affected by every twitch and grunt."

[9] As we show in Sect. 3, some representatives of the school (such as Ajdukiewicz who emphasised the need to develop the bottom-up approach to the study of disciplined inquiry) stressed the importance of treating disciplined inquiry as a more general pattern of thinking and reasoning. Although this accent is different from the 'Geist' behind the Informal Logic Initiative, we can observe that both movements deal – but to varying degrees – with the issue of studying arguments particular to particular research disciplines.

[10] The source of dissatisfaction can be traced to Bar-Hillel (1969). See Johnson and Blair (1980, p. 27, n. 10). For a spirited critique of formal logic, see Scriven (1980, pp. 147–48).

[11] The discussion here is based on the discussion in Johnson's *Manifest Rationality* (2000), pp. 119–120.

[12] Thus, informal logic is 'inform2al' but not 'inform3al.'

[13] Walton, for instance, in the Preface to the 2nd Edition of his *Informal Logic* (2008) wonders whether "semi-formal logic" might not be a better name. A respected philosopher, upon being introduced to Johnson at a professional meeting, said: "Oh, yes, you are one of those people who does 'casual logic'."

[14] See also Griffin's (2013) remarks on Jaśkowski's discussive logic as an example of combining some informal and formal insights into the nature of discussion.

[15] Ajdukiewicz (1965, p. 322) distinguishes knowledge and skills.

[16] Note that Polish logic has a strong tradition in developing the logic of questions, and Ajdukiewicz is known as a precursor of erotetic logic (the logic of questions) in Poland. For the later and most recent developments see e.g. (Wiśniewski 1995), (Urbański and Łupkowski, 2010), and (Łupkowski, 2016).

[17] This broad notion of logic is crucial for the research tradition of the Lvov-Warsaw School and is quite uncommon in North America. This difference may be a reason why the phrase "Polish logical studies in the LWS" is associated in North America mostly with developments of formal logic.

[18] See e.g. Ajdukiewicz (1965) and Czeżowski (2000).

[19] Although the notion of dispositions was present in the writings on logical culture in the Lvov-Warsaw School, most authors do not explicitly say much about dispositions.

[20] This section is based on a paper that Johnson delivered: "Informal Logic & Its Contribution to Argumentation Theory", *The International Symposium: Inside Arguments: Logic vs. Argumentation Theory*, hosted by the Faculty of Letters of the University of Coimbra, 24–26 March 2011.

[21] Barth & Krabbe (1982) make the point that the definition of these terms is a difficult and often unacknowledged problem.

[22] When it comes to typology, we must take note of the dissenting position – that the important question isn't *what type of argument* we are dealing with but *what standards* should be applied (Hitchcock, 1980; Blair, 2007b).

[23] See also Blair (2010) where he offers his most recent thoughts about these standards.

[24] See Johnson (2000; 2003). There does not seem to be a comparable development in the Lvov-Warsaw School.

[25] A collection of their papers can be found in Woods and Walton (2007): *Fallacies: Selected Papers 1972–1982*.

[26] Woleński (1989) distinguishes the broader (mathematical logic + semiotics + methodology of science) and the narrower (mathematical logic) account of logic in the Lvov-Warsaw School. Whereas the broader notion is characteristic rather of an earlier period of the school, the narrow one is characteristic of the Warsaw school of logic that was (according to one interpretation) a formally-oriented part of the school. For the ambiguity in the interpretation of the place of the Warsaw School see Woleński, 1989, p. 81.

[27] For an example of combining the Lvov-Warsaw School tradition with analyses of arguments typical for the informal logic approach, see (Szymanek et al., 2005).

REFERENCES

Adler, J.E. (1994). Fallacies and Alternative Interpretations. *Australasian Journal of Philosophy* 72(3), 271–282. DOI: 10.1080/00048409412346091

Ajdukiewicz, K. (1957). *Zarys logiki* (*The Outline of Logic*). Warsaw: PZWS – Państwowe Zakłady Wydawnictw Szkolnych.

Ajdukiewicz, K. (1965). Co może szkoła zrobić dla podniesienia kultury logicznej uczniów (What school can do to improve the logical culture of students). In K. Ajdukiewicz, *Język i poznanie*, vol. II (*Language and Cognition*, vol. II) (pp. 322–331), Warsaw: PWN – Polish Scientific Publishers.

Ajdukiewicz, K. (1974). *Pragmatic Logic*. (O. Wojtasiewicz, Trans.). Dordrecht/Boston/Warsaw: D. Reidel Publishing Company & PWN – Polish Scientific Publishers. (Original work published in 1965).

Bar Hillel, Y. (1969). Formal Logic and Natural Languages. *Foundations of Language* 5.

Barth, E. M. and E.C.W. Krabbe (1982). *From Axiom to Dialogue: A Philosophical Study of Logics and Argumentation*. Berlin: Walter De Gruyter.

Blair, J.A. (1992). Premissary Relevance. *Argumentation* 6 (2), 203–217.

Blair, J.A. (2003). 'Relationships Among Logic, Dialectic and Rhetoric'. In F. H. van Eemeren, J. A. Blair, C. A. Willard and A. F. Snoeck Henkemans (Eds.), Anyone Who Has a View: Studies in Argumentation, Kluwer Academic Publishers, Dordrecht, pp. 91–107.

Blair, J.A. (2004). Argument and its uses. *Informal Logic* 24(2), 137–151.

Blair, J. A. (2007a). 'Relevance, Acceptability and Sufficiency Today,' *Anthropology & Philosophy* 8 (1–2), 33–47.

Blair, J. A. (2007b). 'The 'Logic' of Informal Logic'. In H. V. Hansen, C. W. Tindale, J. A. Blair, R. H. Johnson, D. M. Godden (Eds.), *Dissensus and the Search for Common Ground. Proceedings of the Seventh OSSA Conference*, University of Windsor, CD-ROM.

Bocheński, J.M. (1974). *Was ist Autorität?* Freiburg: Herder.

Bocheński, J.M. (1994). *Sto zabobonów* (*One Hundred Dogmas*). Kraków: Philed.

Bowles, G. (1990). Propositional Relevance. *Informal Logic* 12(2), 65–77.

Brandom, R. (1994). *Making It Explicit*. Harvard: Cambridge University Press.

Budzynska, K. (2010). Argument Analysis: Components of Interpersonal Argumentation. In P. Baroni et al. (Eds.), *Frontiers in Artificial Intelligence and Applications. Proceedings of 3rd International Conference on Computational Models of Argument (COMMA 2010)* (pp. 135–146). Amsterdam etc.: IOS Press.

Budzynska, K., Araszkiewicz, M., Bogołębska, B., Cap, P., Ciecierski, T., Debowska-Kozlowska, K., Dunin-Kęplicz, B., Dziubiński, M., Federowicz, M., Gomolińska, A., Grabowski, A., Hołówka, T., Jochemczyk, Ł., Kacprzak, M., Kawalec, P., Kielar, M., Kisielewicz, A., Koszowy, M., Kublikowski, R., Kulicki, P., Kuzio, A., Lewiński, P., Lichański, J. Z., Malinowski, J., Marciszewski, W., Nieznański, E., Pietrzak, J., Pogonowski, J., Puczyłowski, T. A., Rytel, J., Sawicka, A., Selinger, M., Skowron, A., Skulska, J.,

Smolak, M., Sokół, M., Sowińska, A., Stalmaszczyk, P., Stawecki, T., Stepaniuk, J., Strachocka, A., Suchoń, W., Szymanek, K., Tomczyk, J., Trypuz, R., Trzęsicki, K., Urbański, M., Wasilewska-Kamińska, E., Wieczorek, K. A., Witek, M., Wybraniec-Skardowska, U., Yaskorska, O., Załęska, M., Zdanowski, K. and Żurek, T. (2014). The Polish School of Argumentation: A Manifesto. *Argumentation* 28(3), 267–282. DOI 10.1007/s10503-014-9320-8 (Special Issue "The Polish School of Argumentation", ed. by K. Budzynska and M. Koszowy).

Coniglione, F., R. Poli, and J. Woleński (1993, Eds.). *Polish Scientific Philosophy. The Lvov-Warsaw School*. Amsterdam: Rodopi.

Copi, I.M. (1954). *An Introduction to Logic*. New York: MacMillan.

Copi, I.M. (1965). *Symbolic Logic.* New York: Macmillan, 2nd ed.

Czeżowski, T. (2000). On logical culture. In T. Czeżowski, *Knowledge, Science, and Values. A Program for Scientific Philosophy* (pp. 68–75). Amsterdam/Atlanta: Rodopi.

Eemeren, F. H. van, and R. Grootendorst (1992). *Argumentation, Communication, and Fallacies: A Pragma-Dialectical Perspective*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Eemeren, F. H. van, B. Garssen, E. C. W. Krabbe, A.F. Snoeck Henkemans, B. Verheij, and J. H. M. Wagemans (2014). *Handbook of Argumentation Theory. A Comprehensive Overview of the State of the Art*. Dordrecht etc.: Springer.

Engel, M.S. (1976). *With Good Reason. An Introduction to Informal Fallacies.* New York: St Martin's.

Ennis, R. H. (1987). A Taxonomy of Critical Thinking Dispositions and Abilities. In J. Baron and R. Sternberg (Eds.), *Teaching Thinking Skills: Theory and Practice* (pp. 9–26), New York: W. H. Freeman.

Federowicz, M. and M. Sitek (2011, Eds.). *A Society on the Road to Knowledge. Report on the State of Education 2010*. Warsaw: Educational Research Institute.

Freeman, J.B. (2005). *Acceptable Premises: An Epistemic Approach to an Informal Logic Problem.* Cambridge: Cambridge University Press.

Goddu, G.C. (2009). What is a 'Real' Argument? *Informal Logic* 29, 1–14.

Groarke, L. (1996). Logic, Art and Argument. *Informal Logic* 18(2–3), 105–129.

Groarke, L. (2017). Informal logic. In E.N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy*, http://plato.stanford.edu/entries/logic-informal/.

Griffin, N. (2013). Commentary on: Marcin Koszowy's 'Polish logical studies in an informal logic perspective". In D. Mohammed & M. Lewiński (Eds.), *Virtues of Argumentation. Proceedings of the 10th International Conference of the Ontario Society for the Study of Argumentation (OSSA), 22–26 May 2013* (pp. 1–5). Windsor, ON: OSSA.

Hamby, B. (2012). What a Real Argument Is. *Informal Logic* 32, 313–326.

Hintikka, J. (1989). The Role of Logic in Argument. *The Monist* 72, 3–24.

Hitchcock, D. (1996). Johnson's The Rise of Informal Logic [critical review]. *Informal Logic* 18, 273–287.

Hitchcock, D. (2006). Informal Logic and The Concept of Argument. In D. Jacquette (Ed.), *Philosophy of Logic*, Volume 5 of D. M. Gabbay, P. Thagard and J. Woods (Eds.), *Handbook of the Philosophy of Science* North Holland: Elsevier.

Hołówka, T. (2005). *Kultura logiczna w przykładach* (Logical culture in examples). Warsaw: PWN – Polish Scientific Publishers.

Jadacki, J.J. (2009). *Polish Analytical Philosophy. Studies on Its Heritage*. Warsaw: Semper.

Johnson, R.H. (1996). *The Rise of Informal Logic. Essays on Argumentation, Critical Thinking, Reasoning and Politics*. Newport News, VA: Vale Press.

Johnson, R.H. (2000). *Manifest Rationality: A Pragmatic Theory of Argument*. Mahwah, NJ: Lawrence Erlbaum Associates.

Johnson, R.H. (2006). Making Sense of 'Informal Logic'. *Informal Logic* 23, 231–258.

Johnson, R.H. (2008). Informal Logic and Epistemology. *Anthropology and Philosophy* 8(1–2), 69–88.

Johnson, R.H. (2009). Some Reflections on the Informal Logic Initiative. *Studies in Logic, Grammar and Rhetoric* 16(29), 17–46.

Johnson, R. H. and J.A. Blair (1977). *Logical Self-Defense* (3rd edition, 1993). Toronto: McGraw-Hill Ryerson. First United States edition: 1994, New York: McGraw-Hill. New United States edition: 2006, New York: IDEA Press.

Johnson, R. H. and J.A. Blair (1987). The Current State of Informal Logic. *Informal Logic* 9 (2–3), 147–151.

Kahane, H. (1971). *Logic and Contemporary Rhetoric* (8th edition, 1997), with Nancy Cavender. Belmont, CA: Wadsworth.

Kamiński, S. (1962). Systematyzacja typowych błędów logicznych (The systematization of typical logical fallacies). *Roczniki Filozoficzne* (Annales de Philosophie) 10, 5–39.

Kneale, W., and M. Kneale (1962). *The Development of Logic*. Oxford: Clarendon Press.

Koszowy, M. (2010). Pragmatic logic and the study of argumentation. *Studies in Logic, Grammar and Rhetoric* 22(35), 29–45.

Koszowy, M. (2012). Logical fallacies as codified within the conceptual system of the Lvov-Warsaw School. *Studies in Logic, Grammar and Rhetoric* 30(43), 23–44.

Koszowy, M. (2013). The methodological approach to argument evaluation: rules of defining as applied to assessing arguments. *Filozofia Nauki* (*Philosophy of Science*) 1(81), 23–36.

Koszowy M. and M. Araszkiewicz (2014). The Lvov-Warsaw School as a Source of Inspiration for Argumentation Theory. *Argumentation* 28(3), 283–300. DOI

10.1007/s10503-014-9321-7 (Special Issue "The Polish School of Argumentation", ed. by K. Budzynska & M. Koszowy).

Kotarbinski, T. (1965). *Praxiology: An Introduction to the Sciences of Efficient Action*. Oxford: Pergamon Press.

Lapointe, S., Woleński, J., Marion, M., and Miskiewicz, W. (Eds.) (2009). *The Golden Age of Polish Philosophy. Kazimierz Twardowski's Philosophical Legacy*. Dordrecht etc.: Springer.

Lorenzen, P. (1955). *Einführung in die operative Logik und Mathematik*, Berlin: Springer.

Lorenz, K., Lorenzen, P. (1978). *Dialogische Logik*. Darmstadt: Wissenschaftliche Buchgesellschaft.

Łupkowski, P. (2016). *Logic of Questions in the Wild. Inferential Erotetic Logic in Information Seeking Dialogue Modelling*. Studies in Logic, vol. 64, edited by Dov M. Gabbay. London: College Publications.

Łuszczewska-Romahnowa, S. (1962). Pewne pojęcie poprawnej inferencji i pragmatyczne pojęcie wynikania (A certain notion of valid inference and the pragmatic notion of entailment). *Studia Logica* 13, 203–208.

Marciszewski, W. (1991). Foundations of the art of argument. Logic Group Bulletin, 1, Warsaw Scientific Society, 45–49.

Marciszewski, W. (1994). *Logic from a Rhetorical Point of View*. Berlin/New York: De Gruyter.

Massey, G. (1981). The Fallacy Behind Fallacies. *Midwest Studies in Philosophy* 6, 489–500.

McCall, S. (1967). *Polish Logic, 1920–1939*. Oxford: Clarendon Press.

Michalos, A.C. (1970). *Improving Your Reasoning*. Englewood Cliffs, NJ: Prentice-Hall.

Munson, R. (1977). *The Way of Words: An Informal Logic*. Boston: Houghton Mifflin.

Perelman, Ch. & Olbrechts-Tyteca, L. (1958). *Traité de l'argumentation: La nouvelle rhétorique*. Paris: Presses Universitaires de France.

Reed, C. & Koszowy, M. (2011). The Development of Argument and Computation and Its Roots in the Lvov-Warsaw School. *Studies in Logic, Grammar and Rhetoric* 23(36), 15–37.

Scriven, M. (1976). *Reasoning*. New York: McGraw Hill.

Scriven, M. (1980). The Philosophical and Pragmatic Significance of Informal Logic. In J. A. Blair & R. H. Johnson (Eds.), *Informal Logic, The First International Symposium* (pp. 147–160), Inverness, CA: Edgepress.

Siegel, H. (1988). *Educating Reason: Rationality, Critical Thinking, and Education*. New York: Routledge.

Simons, P. (1992). *Philosophy and Logic in Central Europe from Bolzano to Tarski. Selected Essays*. Dordrecht: Kluwer.

Simons, P. (2002). A Golden Age in Science and Letters: The Lwów-Warsaw Philosophical School. 1895–1939. An essay for Polish Class at Leeds Metropolitan University, https://sites.google.com/site/petermsimons/peter-s-files.

Simons, P. (2014). The Complexity of Language: Its Sources, Results, and Description. A Lvov-Warsaw School Supplement. *Studies in Logic, Grammar and Rhetoric*, 36(49) (in press).

Smith, B. (1994). Kasimir Twardowski: On Content and Object. In B. Smith (1994), *Austrian Philosophy: The Legacy of Franz Brentano* (pp. 155–195, Ch. 6), Chicago & LaSalle: Open Court.

Smith, B. (2006). Why Polish philosophy does not exist. In J.J. Jadacki & J. Paśniczek (Eds.), *The Lvov-Warsaw School – The New Generation* (pp. 19–39). Poznań Studies in the Philosophy of the Sciences and the Humanities, vol. 89. Amsterdam/New York: Rodopi.

Szymanek, K., Wieczorek, K. and Wójcik, A.S. (2005). *Sztuka argumentacji. Ćwiczenia w badaniu argumentów* (*The Art of Argument: Exercises in Examining Arguments*). Warsaw: PWN – Polish Scientific Publishers.

Tarski, A. (1995). *Introduction to Logic and to the Methodology of Deductive Sciences*. New York: Dover Publications.

Thomas, S. N. (1973). *Practical Reasoning in Natural Language*, (3rd editon, 1986), Prentice-Hall, Englewood Cliffs, NJ.

Twardowski, K. (1965). Symbolomania i pragmatofobia (Symbolomania and pragmatophobia). In K. Twardowski, *Wybrane pisma filozoficzne* (*Selected Philosophical Writings*) (pp. 354–363). Warsaw: PWN – Polish Scientific Publishers.

Urbański M. and Łupkowski P. (2010). Erotetic Search Scenarios: Revealing Interrogator's Hidden Agenda. In P. Łupkowski & M. Purver (Eds.) *Semantics and Pragmatics of Dialogue* (pp. 67–74). Poznań: Polish Society for Cognitive Science.

Walton, D. (1982). *Topical Relevance in Argumentation*. Amsterdam: John Benjamins.

Walton, D. (1984). *Logical Dialogue-Games and Fallacies*. Lanham, Maryland: University Press of America, 1984.

Walton, D. (1990). What is Reasoning? What is an Argument? *The Journal of Philosophy* 87, 399–419.

Walton, D. (1995). Entry on Informal Logic. In R. Audi (Ed.), *The Cambridge Dictionary of Philosophy*, Cambridge: Cambridge University Press.

Walton, D. (1997). *Appeal to Expert Opinion: Arguments from Authority*. University Park, PA: Penn State Press.

Walton, D. (2000). Problems and Useful Techniques: My Experiences in Teaching Courses in Argumentation, Informal Logic and Critical Thinking. *Informal Logic*, 20(2), Teaching Supplement #2, TS35-TS38.

Walton, D. (2008). *Informal Logic: A Pragmatic Approach*. Cambridge: Cambridge University Press.

Walton, D. and F. Macagno (2010). Defeasible classifications and inferences from definitions. *Informal Logic* 30, 34–61.

Walton, D. and T.F. Gordon (2015). Formalizing informal logic. *Informal Logic* 35, 508–538.

Weinstein, M. (1990). Towards a research agenda for Informal Logic and Critical Thinking. *Informal Logic* 12, 121–143.

Wenzel, J. (1990). Three Perspectives on Argumentation. In R. Trapp & J. Schuetz (Eds.), *Perspectives on Argumentation: Essays in Honour of Wayne Brockreide* (pp. 9–26), Prospect Heights, IL: Waveland Press.

Wiśniewski, A. (1995). *The Posing of Questions: Logical Foundations of Erotetic Inferences*. Dordrecht/Boston/London: Kluwer Academic Publishers. Synthese Library, vol. 252.

Woleński, J. (1989). *Logic and Philosophy in the Lvov-Warsaw School*. Dordrecht etc.: D. Reidel Publishing Company.

Woleński, J. (1995). Mathematical logic in Poland 1900–1939: People, circles, institutions, ideas. *Modern Logic 5*, 363–405.

Woleński, J. (2013). Lvov-Warsaw School. In E. N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy*, http://plato.stanford.edu/entries/lvov-warsaw/.

Woods, J. (1994). "Sunny prospects for relevance?". In R.H. Johnson and J. A. Blair (eds.), *New Essays in Informal Logic*, (pp. 93–104), Windsor, ON: Informal Logic Press.

Woods, J. (2004). *The Death of Argument: Fallacies in Agent-Based Reasoning*. Dordrecht and Boston: Kluwer.

Woods, J. (2006). "Pragma-Dialectics: A Retrospective". In P. Houtlosser & Agnes van Rees (Eds.), *Condsidering Pragma-Dialectics*, New York and London: Routledge.

Woods J. and D.M. Gabbay (2002). "Formal approaches to practical reasoning: A survey". In D.M. Gabbay, R.H. Johnson, H.-J. Ohlbach and J. Woods (Eds), *Handbook of the Logic of Argument and Inference: The Turn Toward the Practical*, vol. 1 of the series *Studies in Logic and Practical Reasoning* (pp. 449–481), Amsterdam: North-Holland.